

bonds and (2) at least one oxygen-containing gas selected from the group consisting of O₂, N₂O, NO₂, CO, CO₂, and H₂O;

(b) converting the film-forming gas into a plasma;

(c) contacting the substrate with the plasma to form the silicon-containing barrier insulating film on the substrate; and

(d) forming an interlayer insulating film on said barrier insulating film by coating or plasma enhanced CVD.

2. (Amended) A film forming method according to claim 1, wherein at least one member selected from a group consisting of N₂ and H₂ is added to the film-forming gas.

3. (Amended) A film forming method according to claim 1, wherein (1) is trimethoxysilane (TMS:SiH(OCH₃)₃).

4. (Amended) A film forming method according to claim 1, wherein (1) is tetramethyldisiloxane (TMDSO:(CH₃)₂HSi-O-SiH(CH₃)₂).

5. (Amended) A film forming method according to claim 1, wherein parallel-plate type electrodes are employed as a plasma generating means, and wherein high frequency power having a frequency of 100 kHz to 1 MHz is applied to an electrode on which the substrate is loaded and high frequency power having a frequency of 1 MHz or more is applied to an electrode opposing the electrode on which the substrate is loaded.

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8. (Amended) A semiconductor device manufacturing method according to claim 6, wherein
said interlayer insulating film has a greater thickness than the barrier insulating layer.

Please add the following new claims:

19. A semiconductor device manufacturing method comprising:

forming wiring on a surface of a substrate;

preparing a film-forming gas comprising, (1) at least one member selected from the group
consisting of alkoxy compounds having Si-H bonds and siloxane compounds having Si-H bonds
and (2) at least one oxygen-containing gas selected from the group consisting of O₂, N₂O, NO₂,
CO, CO₂, and H₂O; [and]

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converting the film-forming gas to a plasma;

contacting the surface of the substrate with the plasma to form a silicon-containing barrier
insulating film on the substrate; and

forming an interlayer insulating film on said barrier insulating film.

20. A film-forming method according to claim 1 wherein (1) is TMS and (2) is N₂O and wherein
the volumetric ratio of N₂O/TMS is about 30:1.

21. A film-forming method according to claim 1 wherein step (d) forms a porous insulating film
or a SiOF film by plasma enhanced CVD.--